
Two New Species of *Eugenia* (Myrtaceae) from Coastal Brazilian Rainforest

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ABSTRACT. Two new species of the genus *Eugenia* L. from the Atlantic coastal forests of the southeastern Brazilian states of Bahia and Espírito Santo are described, illustrated, compared with related species, and evaluated in their IUCN conservation status. *Eugenia cataphyllea* M. C. Souza & Sobral is related to *E. xanthoxyloides* Cambess., from which it differs by the longer cataphylls, larger and pilose leaves, bracteoles persisting after anthesis and pilose flowers. *Eugenia hispidiflora* Sobral & M. C. Souza is apparently related to *E. hirta* O. Berg, from which it can be distinguished by its longer leaves and densely hispid flowers.

RESUMO. Duas novas espécies do gênero *Eugenia* L. ocorrentes na Mata Atlântica dos estados da Bahia e Espírito Santo, no sudeste do Brasil, são descritas, ilustradas, comparadas com as espécies próximas e avaliadas em seu status de conservação de acordo com os critérios da IUCN. *Eugenia cataphyllea* M. C. Souza & Sobral é próxima a *E. xanthoxyloides* Cambess., diferindo pelos catáfilos mais longos, folhas maiores e pilosas, bractéolas persistentes após a antese e flores pilosas, e *E. hispidiflora* Sobral & M. C. Souza é aparentemente próxima a *E. hirta* O. Berg, da qual se distingue pelas folhas maiores e flores maiores e densamente híspidas.

Keywords: Atlantic rainforest, Brazil, *Eugenia*, IUCN Red List, Myrtaceae.

Eugenia L. is a pantropical genus of about 1000 species (Govaerts et al., 2014), with 378 species growing in Brazil (Sobral et al., 2014). The genus is common in the Atlantic rainforest along the coast of Brazil (Thomaz & Monteiro, 1997; Negrelle, 2002; Amorim et al., 2005; Jesus & Rolim, 2005). During the examination of collections from the coastal rainforests of southern Bahia and northern Espírito Santo, we found two distinctive species of *Eugenia* that are herein proposed as new.

1. *Eugenia cataphyllea* M. C. Souza & Sobral, sp. nov. TYPE: Brazil. Espírito Santo, mun. Linhares, Reserva Natural da Vale do Rio Doce, 24 Sep. 2001, D. A. Folli 4068 (holotype, RB; isotypes, BHCB, CVRD, HUFSJ). Figure 1.

Diagnosis. This species is related to *Eugenia xanthoxyloides* Cambessèdes, from which it is distinguished by the cataphylls to 20 mm along the twigs (vs. to 10 mm), leaf blades to 105 × 45 mm and abaxially pilose (vs. to 40 × 20 mm and glabrous), bracteoles persisting at anthesis (vs. deciduous), and ovaries densely pilose (vs. glabrous).

Shrub ≤ 2 m. Twigs terete, the 2 or 3 distal internodes 30–60 mm, 1–2 mm in diameter, cylindrical, hirsute, with white simple trichomes ≤ 1 mm and protected by 7 to 10 pairs of narrowly oblong, concave cataphylls, the proximal ones widely ovate ≤ 3 × 1.5–2 mm, increasingly longer distally, about 5 × 2 mm to 10 × 2 mm medially, the most distal ones reaching 15–20 × 1.5–2 mm, the most distal ones glabrous or occasionally with scattered simple white trichomes to 0.5 mm abaxially, older twigs mostly glabrous, without cataphylls and somewhat exfoliating longitudinally. Leaves with petioles 1–2 × 1.2–2 mm, visible mostly abaxially, hirsute, densely covered with rufescent trichomes to 1 mm; blades narrowly elliptic or obovate, 50–105 × 23–45 mm, 2 to 2.5 times longer than wide, discolored when dry, lighter abaxially, apex acute to acuminate in 5–10 mm, base rounded or cordiform; glandular dots, < 0.1 mm in diameter, 20 to 30/mm², visible abaxially; lateral veins 12 to 15 at each side, leaving the midvein at angles of 50°–80°, moderately salient adaxially and less so abaxially, midvein markedly sulcate adaxially and prominent abaxially, glabrous adaxially and with simple white or brown trichomes 0.8–1 mm abaxially, most dense along the midvein, marginal veins 2, the inner one 2.5–3 and the outer one 0.3–1 mm from the revolute margin. Inflorescences terminal, racemiform, axis at anthesis



Figure 1. *Eugenia cataphyllea* M. C. Souza & Sobral. Image of holotype, D. A. Folli 4068 (RB).

to 5×1 mm, glabrous, with 2 to 4 flowers, protected basally by 5 to 6 series of glabrous bracts, these shining in dried material and bearing a mucilaginous covering (sticky when fresh, according to personal information by the collector), the basal ones ovate, to

1×2 mm, increasing distally up to narrowly elliptic, $6 \times 1.5-2$ mm; bracts subtending flowers not observed; pedicels $6-8 \times 0.4$ mm, hirsute, with white simple trichomes to 0.4 mm; bracteoles oblong to oblong-spathulate, concave, $4-5 \times 0.5-1$ mm,

glabrous or with cilia to 0.3 mm, persisting after anthesis, with 5 to 6 pairs of linear colleters 0.5–1.5 × 0.1–0.4 mm at its adaxial base; flower buds elliptic, to 5 × 4 mm, the ovary densely covered with white erect trichomes 0.5–0.8 mm, contrasting with the glabrous calyx lobes, these 4, equal or nearly so, widely ovate, 3–3.5 × 1.8–3 mm, moderately concave, patent at anthesis, with visible glands abaxially, with hyaline margin about 0.2 mm wide and cilia 0.2–0.4 mm; petals 4, elliptic to obovate, equal, 6–7 × 5–6 mm, white, glabrous; stamens seventy to eighty, 3–7 mm, anthers subglobose, 0.2 × 0.3 × 0.3 mm, eglandular; staminal ring rounded, to 2 mm in diameter, with scattered white trichomes to 0.2 mm; style to 10 mm, stigma punctiform, slightly papilose; ovary 2-locular, with 14 to 17 ovules per locule. Fruits immature, globose, to 6 mm in diameter, with white trichomes as the ovary but less dense, crowned by the calyx lobes; seeds not seen.

Distribution, habitat, and phenology. *Eugenia cataphyllea* is a shrub in rainforests of northern coastal Espírito Santo, collected at altitudes of 20–60 m at the Vale do Rio Doce Natural Reserve, in the municipality of Linhares. It is presently known only from the type material, collected with flowers and immature fruits in September.

IUCN Red List category. Considering that *Eugenia cataphyllea* is presently known only from three collections from the same place, the Vale do Rio Doce Natural Reserve at Linhares, more detailed information that could help assign it to an IUCN conservation category (IUCN, 2012) is missing, so it must be presently scored as DD (Data Deficient).

Etymology. The epithet alludes to the presence of cataphylls in the twigs of this species, an uncommon character in Brazilian species of *Eugenia*, presently registered only for this species, *E. xanthoxyloides*, and the unrelated *E. myrciariifolia* Soares-Silva & Sobral (for a description, see Soares-Silva & Sobral, 2004).

Vernacular name. Batinga-melosa (*Folli 6217* [CVRD, HUFSJ]).

Relationships. *Eugenia cataphyllea* is related to *E. xanthoxyloides*, a species native to the state of Rio de Janeiro (for a description, see Cambessèdes, 1832–1833; Berg, 1857–1859), from which it is distinguished by the characters presented in the diagnosis.

Paratypes. BRAZIL. Espírito Santo: mun. Linhares, Reserva Natural da Vale do Rio Doce, Antiga Estrada do

MME, 23 Oct. 2008, G. S. Siqueira 447 (CVRD, HUFSJ), Estrada do Aceiro Bobbio, 30 Oct. 2008, D.A. Folli 6217 (CVRD, HUFSJ).

2. *Eugenia hispidiflora* Sobral & M. C. Souza, sp. nov. TYPE: Brazil. Espírito Santo, mun. Linhares, Reserva Natural da Vale do Rio Doce, 28 Nov. 2002, D. A. Folli 4431 (holotype, RB; isotypes CVRD, HUFSJ). Figure 2.

Diagnosis. This species is related to *Eugenia hirta* O. Berg, from which it is kept apart by its larger blades (to 140 × 40 mm vs. to 50 × 30 mm), 2–3.2 times longer than wide (vs. 1.3–2 times longer than wide), with ≤ 16 lateral veins at each side (vs. ≤ 8), inflorescences racemiform with axes to 8 mm with ≤ 8 flowers (vs. inflorescences with no visible axis, mostly uniflorous or with two flowers), and flowers densely covered with trichomes to 2 mm, these more dense on the ovary than on the calyx lobes (vs. flowers sparsely and uniformly covered with trichomes to 0.5 mm).

Shrub ≤ 3 m. Twigs terete, the 2 or 3 more distal internodes 40–60 mm, 0.5–1 mm in diameter, cylindrical, sometimes exfoliating longitudinally, new twigs with simple erect white trichomes, 1–2 mm, these falling with age. Leaves with petioles 1–2 × 0.8–2 mm, visible mostly abaxially, with trichomes to 1 mm; blades ovate-oblong to oblong or lanceolate, 60–140 × 27–43 mm, 2–3.2 times longer than wide, slightly discolored when dry, lighter abaxially, glabrous adaxially and with simple erect trichomes 1–2 mm abaxially, these scattered along the surface in younger blades and mostly restricted to the midvein with age; apex acuminate in 12–18 mm; base cordiform; glandular dots faintly visible abaxially, ≤ 0.1 mm in diameter, 5 to 10 per square millimeter; midvein moderately sulcate adaxially and prominent abaxially; lateral veins 12 to 16 at each side, leaving the midvein at angles of 70°–80°, moderately to markedly sulcate adaxially and salient abaxially; marginal veins 1 or occasionally 2, the inner one 2–4 mm, the outer one when present 0.5–1 mm from the revolute and sometimes undulate margin. Inflorescences terminal or axillary, occasionally ramiflorous, racemiform, axis 2–8 × 0.7–0.8 mm, with 2 to 6 flowers, then solitary; bracts oblong, 0.8–1 × 0.4 mm, glabrous or with cilia to 0.1 mm; pedicels 10–15 × 0.2–0.3 mm, uniformly covered with simple erect white trichomes 1–2 mm; bracteoles triangular, to 0.5 × 0.3 mm, glabrous or with trichomes as the pedicels, persisting after anthesis, colleters not observed; flower buds obovate, 4–5.5 × 3–4 mm, densely pubescent especially in the ovary, which contrasts with the less pubescent calyx lobes, these four being 4–5 × 1–1.3 mm, explanate at anthesis, markedly concave, elliptic to narrowly elliptic, subequal, adaxially glabrous, abaxially markedly



Figure 2. *Eugenia hispidiflora* Sobral & M. C. Souza. Image of holotype, D. A. Follí 4431 (RB).

glandulose and hispid with erect simple trichomes 1–2 mm, margin hyaline for ca. 0.2 mm, with cilia to 0.2 mm; petals 4, elliptic, in two slightly unequal pairs, 5–7 × 4–6 mm, white, glabrous or with apical tufts of cilia to 0.1 mm; stamens sixty to seventy, 5–7 mm,

anthers ovate-oblong, 1.5–1.8 × 0.6–0.7 mm, with one apical gland; staminal ring subquadrate, glabrous, ≤ 1 mm in diameter; style ≤ 10 mm, stigma punctiform or slightly capitate, moderately papillose; ovary 2-locular, with 5 to 9 ovules per locule. Fruits

globose to slightly elliptic, red when ripe, 10–12 × 9–10 mm, with scattered erect trichomes as the flowers, crowned by the calyx lobes, these sometimes enlarged to 7 × 4 mm; seeds as far as observed one per fruit, globose, testa light brown and easily detachable, the embryo with fused cotyledons and no visible hypocotyl.

Distribution, habitat, and phenology. *Eugenia hispidiflora* is a shrub in rainforests along the coastal regions of northern Espírito Santo and southern Bahia, found at elevations of 20–60 m. Flowers have been collected in November, and fruits in January and February.

IUCN Red List category. *Eugenia hispidiflora* is presently known from three municipalities; plotting the presently known distribution results in an extent of occurrence of 10,777 km² (geographical references, except for Oliveira, França, Melo & Silva 596 [HUEFS, HUFSJ], are based on the municipalities location; extent of occurrence is obtained via Geocat [<<http://geocat.kew.org>>]; see Bachman et al., 2011), an area that suggests the Vulnerable (VU) conservation category (IUCN, 2012); however, there is no additional information about its occurrence in the area between the collection sites; considering this, until new collections permit a more adequate evaluation, it seems more adequate to score the conservation status of *E. hispidiflora* as DD (Data Deficient).

Etymology. The epithet alludes to the covering of firm erect trichomes of the flowers of this species.

Relationships. *Eugenia hispidiflora* is related to *E. hirta* (for a description, see Berg, 1857–1859: 574), a species native to Bahia, from which it is distinguished by the characters cited in the diagnosis.

Paratypes. BRAZIL. Bahia: mun. Camacan, estrada a Itaimbé, 20 Jan. 1971, T. S. Santos 1374 (CEPEC); mun. Porto Seguro, 22 km do entroncamento da BR-367 com BA-001, 16°28'08" S, 39°09'06" W, 29 May 2000, R. P. Oliveira, F. França, E. Melo & B. M. Silva 596 (HUEFS, HUFSJ). Espírito Santo: mun. Linhares, Reserva Natural da Vale do Rio Doce, Feb. 2007, J. R. Stehmann 4748 (BHCB, CVRD), Estrada da Jueirana Facão, 11 Jan. 2008, M. C. Souza 571 (CVRD, HUFSJ, RB), Estrada Municipal do MME, 5 Jan. 2010, D. A. Folli 6526 (CVRD, HUFSJ).

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